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Horticulture and the Experiment Stations.

AMONG the appropriations made by Congress for the current year is the item of $685,000 for Agricultural Experiment Stations. By the terms of the act establishing a station in every state, this sum is to be added annually by the Federal Government to the appropriations made by the several states for the same purpose. This liberal endowment ought to mark an era in the country's agricultural progress. We have a right to expect important additions to our knowledge from the labors of the large number of educated men who will be selected for the express purpose of investigating problems connected with the soil and with plant growth. Horticulturists, no less than others who till the soil, are looking towards the new institutions with mingled curiosity and hope, for they have the same need of instruction and an equal right with farmers to expect that their special wants will be considered. Every intelligent gardener and fruit grower is conscious that he is confronted on every hand by problems which he cannot solve, and that his success is menaced by enemies whose attacks he feels powerless to repel. If he knew how to mitigate, in a greater degree, the effects of drought, how to feed his crops more cheaply, how to wage a more hopeful war against the insects and plant diseases which beset him in increasing numbers every year, and how to select varieties that are best adapted to his conditions, his labors would command a more satisfactory reward. The experiment stations were created to answer questions of this kind, and if careful investigation will avail in solving them, horticulture should reap material advantage from the money, time, labor and study expended.

There is no reason why the claims of horticulture should be slighted at any station; indeed, there are special reasons why they should receive marked attention. The products of the orchard and the garden are not inferior in importance to those of the field, and they are quite as indispensable to the general health and comfort. The operations of horticulture are more concentrated than those of other departments in the broader field of agriculture, so that practical cultural questions come home with greater force to the gardener and fruit grower than to the farmer. Land devoted to horticultural use almost invariably bears a heavier burden of taxation than that devoted to ordinary farming. It requires a greater comparative outlay for labor, for fertilizers and for seed. The injuries to orchard and garden by bad seasons, and by destructive insects and diseases, are more disastrous than those from which the farm suffers, because the crops have a higher money value.

It is gratifying to note that these facts seem to be recognized by the stations, for in the majority of those that have been organized thus far, a horticulturist has been added to the staff of experimenters. The prospect would be more encouraging if the officers selected for this duty were men of wider experience. The natural excuse for appointing untrained men to these important positions is, that the supply of such men is not equal to the demand; that it is impossible to find in the country a sufficient number of skilled horticulturists to take charge of the work in so many stations. But the fact remains that no honest effort has been made to discover men of the requisite ability in this direction or at least no sufficient inducement has been offered to make the position a desirable one. In most cases inadequate salaries are offered for this branch of station work, which means that the Boards of Control consider horticulture of subordinate importance and are willing to take inferior men, with the prospect of inferior work. It is worth noting that in one of the stations, at least, a florist has been appointed, and it may be added that there is no good reason why an industry of such magnitude as commercial floriculture should not be represented in this work. And when we consider how much attention is paid to the cultivation of flowers and plants for ornament throughout the country, this certainly would seem an appropriate field for investigation and popular instruction.

It may be well to warn gardeners and fruit growers not to expect too much from the young stations. To the novice, the making of experiments may seem an easy task, but experience proves that few things are more difficult than the gathering of accurate and helpful information in this way. The highest skill is demanded in every operation, and with this must be united close observation and a faculty for gathering in every related fact for purposes of generalization. The experimenter must not only have unswerving intellectual honesty, but a trained ability to weigh evidence and a cool judgment that is never swayed by a preconceived hypothesis. And yet he must be adventurous in constructing theories, for mere machine-like accuracy in weighing and measuring can never take the place of the creative genius which originates hypotheses. A great discovery in science was once well characterized as an "inspired guess." But it is only the mind well equipped by study and in perfect command of all its resources that invents a sound theory so easily and naturally that it seems to be only a lucky guess. With so many raw recruits just entering the experimental field, it will be fortunate, indeed, if costly mistakes are not made. For a time, at least, it may require greater wisdom on the part of the practical cultivator to separate the true from the false in the bulletins borne on every mail than was exercised originally in preparing them. But a beginning must be made, and while we need not be over-hopeful of immediate results, it is safe to anticipate signal advantage to horticulture and agriculture from the stations, when their work is thoroughly organized and systematized. Capable Directors and their assistants will become more useful with larger experience. Under the searching criticisms of the press incompetent men will be weeded out and the work will at last fall into the hands of those who will prosecute it with wisdom, devotion and enthusiasm. It may require years of patient waiting before the new stations become as helpful here as they have proved in Europe, but some of the older ones already justify every reasonable hope of their founders. In future numbers we hope to indicate some of the more promising lines of investigation which should be pursued in the interests of horticulture.

ACCORDING to the English papers an extraordinary piece of tree planting has been undertaken in Wales. On the side of Moel Rhiwen mountain a loyal enthusiast, Mr. Assheton Smith, is inscribing in letters formed with trees, and each six hundred feet in length by twenty-five feet in width, the words "Jubilee, 1887." The first trees were planted with much ceremony on the Queen's jubilee day; 630,000 trees will be needed to complete the giant inscription, and two hundred men are constantly employed upon the work. It is not pleasant to think what an amount of good planting might have been accomplished if a different direction had been given to the expenditure of all this energy and money, which now will go merely to disfigure a whole country-side with a colossal monument to wastefulness and bad taste. And, what is worse, so liable is a modern nation to be led astray by any conspicuous novelty, Mr. Smith may find many admirers, and, perhaps, an imitator or two—a supposition justified in the fact that no English journal which we have seen has uttered a protest against his scheme.

No planting as bad as this has yet been done in America, and it is doubtful, perhaps, whether anything quite so bad in disfiguring nature has ever been deliberately attempted before anywhere.

Tree-planted letters, however, are not a novelty. In the hunting-park at Moritzburg, near Dresden, there may still be seen the initials of a certain seventeenth-century prince done in evergreen trees, clipped in such a way that their height increases from the base to the top of the letters, which are seen, therefore, as though laid on an inclined plane. But these letters are only some thirty feet in length and are hidden away in a corner of the park. When this device was made, formal planting, the clipping of trees and puerile gardening tricks of many sorts were in universal use; and, placed as it was, it had at least the merit of being unobtrusive. It has remained for the nineteenth century, which prides itself upon a truer love for the genuine beauties of nature, to disfigure a whole mountain-side and a lovely landscape with a gigantic inscription which can be read for miles.

The Pine Barrens in May.

IT is the last of May, and very late in the Pines. The broad-leaved Laurel (*Kalmia latifolia*) is only just beginning to unfold its many-flowered corymbs of rose-colored and white blossoms, making the waste places gay and brilliant. And its small relative, the Sheep Laurel, is opening its deep crimson-colored flowers. In some places it has taken possession of the ground to the almost entire exclusion of other plants.

The Stagger Bush (*Andromeda Marianna*) is in full bloom. Although not as showy as the Laurel, yet its large clusters of pure white, waxy-looking bells make it very attractive. Another shrub of this genus, *A. ligustrina*, is also in flower, as well as its near congener, *Leucothoë racemosa*, with long one-sided racemes of white flowers.

The Sand Myrtle (*Leiophyllum buxifolium*), a little evergreen shrub, with umbel-like clusters of flowers, is charming. The small petals are pure white, but the ten exserted purple-pink stamens give it considerable color, while the dark, shining leaves make an effective background for the flowers. In the more moist places *Itea Virginica* is abundant, and covered with racemes of small white flowers. But the crowning beauty among these wild shrubs is the Fringe-tree (*Chionanthus Virginica*), which here and there are so white with their graceful, drooping panicles of flowers that at a little distance they look like snow-banks.

The heavy odor of the Swamp Magnolia proclaims its presence on every side, and those who like the fragrance are fortunate, as the flowers are very beautiful amid the deep setting of the shining leaves. The Swamp Maple, growing alongside, is also pretty and effective with its long, swaying pedicels and winged scarlet fruit.

The Holly (*Ilex opaca*) is shedding its winter leaves, and sending out new ones, which have not yet taken on the glossy green that characterizes them later in the season. The bright red berries are still scattered over some of the trees, while the new shoots are full of clustered flowers, giving promise of abundant berries for next Christmas time. Its relative, the Ink-berry (*I. glabra*), is also in bloom, while retaining its thick evergreen leaves and black berries. And another shrub of this genus, the Black Alder (*I. verticillata*), is likewise holding its bunches of scarlet berries while being crowned with new leaves and flowers.

In the distance I see great clumps of Mistletoe, and on a near approach I find this, too, covered with flowers amid its white berries. The flowers are greenish yellow, nearly the color of the thick, persistent leaves. The Sweet Gum trees, on which it has made its home, have a forlorn, prematurely old look, as if they did not enjoy the burden imposed upon them. The Shad-bush (*Amelanchier Canadensis*, var. *oblongifolia*), together with most of the Blueberries, are nearly out of bloom, and forming fruit for a plenteous harvest.

Many of the herbaceous plants are now in the first flush of beauty. Among the most notable is *Xerophyllum asphodeloides*, which sends up from a thick tuft of evergreen, grass-like leaves, from one to eight or ten flower stems, surmounted at the top with a compact raceme of beautiful white flowers. The Pitcher-plant is also unfolding its singular deep purple flowers, and its strange, pitcher-shaped leaves have withstood the frost of winter, and are still fresh and bright.

The Pine Barrens also nourish some lovely Orchids. The delicate *Arethusa bulbosa* is now in bloom, and the low Moccasin flower (*Cypripedium acaule*), and these will be succeeded by other species until frost comes in the fall.

And here, too, I find the pretty little Star-flower (*Trientalis Americana*), with its pure white stars standing above the whorl of pretty leaves. It is called a northern plant, whose habitat is cold damp woods, but here it is fresh and vigorous, with stems bearing three and sometimes four flowers. The slender Blue Flag (*Iris Virginica*), with leaves no wider than some of the grasses and sedges that surround it, is just beginning to open its fine, delicately formed flowers. And the little heath-like *Hudsonia tomentosa* is thick in the more sandy places—scarcely allowing room to step—and is covered all over with bright yellow flowers, that are too pretty to crush with the foot. And here is the Cucumber-root (*Medeola Virginica*), the stem clothed with white wool, and bearing two whorls of leaves, and just beneath the upper one small recurved purple flowers.

Most of the plants herein mentioned can be easily cultivated. I have a nook in my garden devoted to them, where they are growing finely. One side of the bed is bordered with *Xerophyllum*, which blooms freely. One plant has eight flower stems, others four and five, making a beautiful display. The Pitcher-plant also does well in an artificial swamp—five flowers on one plant. This, and other bog plants, are more beautiful here than in the wild swamps, as they never suffer from drought as they often do in the shallow bogs—the home of their birth. *Mary Treat.*

May 30th.

Suggestions for the Improvement of Cemeteries.

WE shall be able, perhaps, to realize more quickly and clearly the direction in which to seek for improvement in cemeteries by following a more practical and out-of-doors method of investigation than by consulting an art-library. Let us, then, consider the simplest possible example and see what suggestions it may offer for our guidance in more complex and more extensive cases.

Some of us, perhaps, may remember to have seen a cluster of many family graves in an uncultivated nook

or dell of an old farm, where some of the less commercially valuable, but equally beautiful, original timber trees have been allowed to grow undisturbed, till their very size makes the few brown-stone grave-slabs seem modest and nestling to the ground, and where, the cattle having been kept out, the wood violet and other shy wild plants add their delicate charms, while they also mark the peaceful seclusion of the spot. Such simple and yet dignified rural furnishings are in harmony with the purpose to which the place is dedicated and to the feelings of the sympathetic visitor to it, and leave the imagination free to conjure up, if it will, romantic visions of the past. In such a spot the thought might easily occur to one that here was indeed a restful place in which to have laid away the mortal remains of a few of those weary human beings whose life struggle it was to subdue nature to their own aims, and who yet finally succumbed to her and whose remains became a part of her.

How much more appropriate to their lives are such graves, with such surroundings, than they would have been in some great cemetery, where their modest little grave-stones would have been put to shame by scores of big, staringly white Egyptian obelisks, broken topped Greek columns, Roman urns, weeping Italian angels, Renaissance canopies, Gothic spires, and all the other kinds of showy monuments, and where all restfulness and seclusion are annihilated by rows upon rows and scattering swarms of factory-made, white marble grave-stones, all set up on edge so as to be as conspicuous as possible and looking as if they would be heaved out of plumb by every frost. Such stones have, in fact, the very unmonumental quality of being in a state of unstable equilibrium. And as if all these white monuments and grave-stones were not enough to frighten Nature into submission, innumerable fences are added, mostly of the sort which may be described as the "this-is-the-most-show-you-can-get-for-your-money" cast iron fence. And, as iron rusts into a color which is somewhat harmonious with nature, such a catastrophy is carefully avoided by painting all iron work a gloomy black, or vivid white, or by gilding it, like a cresting over a chromo tea store. The managers of cemeteries seem to be proud of these private fights with Nature, and do all they can to aid and abet them with their ribbon gardening and by planting all the most artificial looking specimens of "nature's bright productions" that skillful nurserymen can induce to grow. They have no limiting rules as to showiness, but are only too glad to sell lots to those who will spend most in making a show that will advertise the cemetery.

The few who feel dissatisfied with this state of things should organize new associations for forming and maintaining truly rural cemeteries. They should have other and higher ideals in their minds, and should limit themselves and their successors by strict rules adapted to secure the desired result—so far as rules can do so. If they allow monuments at all, they should use the same care and discrimination that a "hanging committee" do in limiting and arranging the works of art that necessity compels them to place so cruelly close together in a gallery. But they ought to go further than this; they should encourage, if not require, burials to be made with no monuments at all at the graves beyond the merest end of a dark colored stone that will serve to permanently mark the spot and to carve a family name upon. All other necessary information in regard to persons buried in the cemetery can be given on slabs in a memorial wall at the entrance, or by written records. They can provide halls, galleries, or loggias in which to place basreliefs and other sculptures of suitable character and size, and thus avoid all mounments scattered promiscuously through the grounds. As for planting, it should be done according to a comprehensive scheme, and the choice of plants had, probably, best be limited to such as are native in the region; not that this is essential, but in order not to leave too much to the discretion of zealous, but indiscreet persons, who are constantly making their selections for planting upon the supposition that what is good under some circumstances must be good always. They should establish a rule limiting fences to those that are necessary, and requiring these to be in conformity with some general scheme devised with due regard to harmony with and strict subordination to nature. There should be a like subordination to nature in all other necessary artificial constructions, such as retaining walls, bridges, roads, walks, gutters, steps, guide posts, vault fronts, and so on. They should avoid formality and artificiality in all things and at all times, for they should remember that they have set out to make a rural cemetery and not an architectural one.

J. C. Olmsted.

Brookline, Mass.

The Cultivation of Huckleberries.

Gaylussacia and *Vaccinium*, genera belonging to the Huckleberry tribe of the *Ericaceæ* or Heath Family, comprise a hundred or more species found in various regions, but chiefly in America, where they are known as Huckleberries, Blueberries and Cranberries. Owing to their great abundance, few attempts have been made to improve any of them except the Cranberry. The time will come, however, when every small-fruit garden will have its improved varieties of Blueberry or Huckleberry, as well as its Strawberries and Raspberries. No good collection of these plants, so far as I know, exists in any of the European gardens, and, apart from the collection started at the Arnold Arboretum, I know of none in America. Indeed, so difficult has the cultivation of these plants been considered, that any record of success in the attempt has usually been doubted.

The growing of Huckleberries and Blueberries from seed requires close attention, and can hardly be carried on successfully without a green-house or frame. The best soil to use for them is sand and loam in equal parts, care being taken that the sand is free from clay or iron.

Shallow earthen pans are better for the seed than boxes, as there is less danger from fungus, but after the first transplanting boxes may be used.

As soon as the fruit is received it should be macerated in water for several days, so as to separate it from the pulp, and then washed clean. If early in the season, seeds of the early varieties may be sown at once, and will come up in a few weeks, but as the plants will make little growth, they will need careful handling to keep them over the first winter. It is better to wash out the seed and mix with fine moist sand, and keep in a cool pit or frame until the days begin to lengthen, say about the middle of January. Then prepare the seed pans or pots and insure free drainage by using sphagnum or coarse siftings of peat. Firm the soil well and give a gentle watering with a fine hose. When the soil has settled, scatter the seeds thickly and evenly over the surface and give the lightest possible covering. Then add a layer of fine sphagnum, syringe lightly, and set the pans in a temperature of 60° to 65°. After sowing, if the seed is not allowed to become dry, it will usually come up in from five to six weeks, although I have known it to lie in the ground a year and then germinate. The pans should be examined now and then, and as soon as the seed shows signs of germination the coarsest of the moss should be removed. When the plants have made the first rough leaf they should be pricked off thickly in shallow boxes and fresh soil prepared and drained as for the seed. They should be syringed every day and kept growing in a high temperature and moist atmosphere. As soon as they have covered the ground they should be again transplanted. After the third pricking out, if everything has been carefully attended to, they will be growing strongly and will need more air and less moisture, to harden them off gradually. The frequent transplanting in fresh soil each time keeps the plants from damping off and encourages good root-growth. About the 1st of September they can be removed to a cold-frame or pit in some sheltered situation, where they should have plenty of air every pleasant day, but should be covered at night to keep them from frost as long as possible, so that they may become ripened before going into their winter quarters. As winter sets in they should be covered with moss and shutters, and will only need airing once or twice a month for a few hours to guard against fungus, which will start even in a cold-frame if kept long without air. About the first of May they can be planted in prepared beds of peaty soil or a light sandy soil of good depth. If dry weather sets in they will require a good

syringing toward evening, as the plants are not deeply rooted yet, and delicate rootlets are soon destroyed if allowed to dry. After the middle of August the syringing may be discontinued, so that the plants may ripen well. When freezing weather comes the beds should be mulched with Pine needles, Oak leaves, or other similar material, to keep the plants from heaving. After the second year they are transplanted to the nursery and need only ordinary care. When finally removed they will be found to transplant with the greatest of ease, and no perceptible loss.

The Huckleberries and Blueberries can also be propagated from cuttings of the underground stems or stolons which are found on many varieties. These can be taken up in the autumn, cut in lengths of two or three inches, planted in boxes of sandy peat or loam, and kept in a cool pit or house away from severe frost until about the 1st of February. They then require a gentle heat and moisture until they start. When they have made a good growth they should be hardened off and treated as other hard wood plants, but, like other members of the Heath Family, they cannot endure saturation while growing under artificial treatment.

These plants can also be grown by layers, by bending down the branches and tonguing, as with other hard wood plants. A good moist mulch of moss around the young layers will accelerate the rooting. I have not as yet propagated them from cuttings or grafting, but I see no reason why this should not be done with cuttings of the young wood, just as other Ericaceous plants are propagated.

I should advise those not having green-house facilities to select healthy young plants from an open pasture if possible, not more than a foot high. Much larger ones can be transplanted, but greater care is needed for success. Take them up early in September and plant them firmly and thickly in a well prepared bed, which should have a good share of sand and peat with the loam. Protect well with a heavy mulch, and during the first summer keep them well watered when the weather is dry. If the ground is kept well stirred and clean, by the second spring they will have an abundance of fine roots, when they can be transplanted where they are to remain with the greatest ease and safety. I have handled thousands of them in this way with perfect success. My reason for transplanting early in September is that new roots are then formed before winter sets in, and if well mulched, as stated above, they are ready for a strong start in the spring. While they will do well in any good soil not overcharged with manure, I find they give more satisfaction if a few inches of peat or leaf mold is spaded in with the soil. On poor light lands a top dressing of well decomposed cow-manure would be beneficial. Strong, rank manure should be avoided, as most plants of this family resent its use.

The following are a few of the best known North American species: The Black Huckleberry (*Gaylussacia resinosa*) is a shrub from two to three feet high, with dull, reddish yellow flowers and sweet, crisp, globular berries of a shiny black color. The fruit is firmer than that of other species, which makes it of more value as a market berry. But it is much more difficult to start and is not so easily transplanted as the Blueberry. Of several marked varieties, one has very sweet, pear-shaped berries, with blue-black bloom; the common name of "Sugar Plums" has been given to them. Another variety has glaucous leaves, and berries covered with a glaucous bloom. A third has large bluish berries, with rich flavor, and a fourth has white berries, which are much more delicate to the taste and bring in market more than double the price of the common varieties. Large areas of Huckleberries now grow wild, and yet the crop is diminishing each year, and it would be prudent to prepare for future supplies. Superior varieties could be originated, and they might be made as profitable, no doubt, as other small fruits. Naturally, the Huckleberry is found in open woods and dry rocky hills from Canada to Georgia.

The Dangleberry or Tangleberry (*G. frondosa*) is easily distinguished from the common Huckleberry by its large pale green leaves, which are glaucous beneath, and its loose drooping racemes of flowers often from two to three inches long. When neither in bloom or in leaf, it can be distinguished by the reddish yellow wood of the new growth, and the ashy gray bark, often peeling from the old wood. The fruit is large and has a blue bloom. It ripens much later than the former species and is more acid in flavor. It is not common in eastern Massachusetts, except along the seashore. I have never found it more than three or four miles from the coast. It is a much stronger growing shrub than *G. resinosa* and of a more open, branching habit, often being found more than four feet high. Farther south it comes to greater perfection and is considered superior in flavor to other varieties. It is native from Massachusetts to Florida. It grows much more readily in cultivation than *G. resinosa* and might be improved like the other species by selection or hybridization.

The Bush Huckleberry (*G. dumosa*) is a small shrub not more than two feet high and not as common in eastern Massachusetts as the other species. I have usually found it in sphagnum bogs with Andromedas and Cassandras. The leaves are narrow and shining above. The flowers are in short racemes and bracted. The berries are of a good size and shiny black, not abundant and rather insipid, but not unpleasant to the taste. Plants transplanted into a deep moist soil at the Arboretum only two years planted are doing fairly well.

The Deerberry, or Squaw Huckleberry (*Vaccinium stamineum*), is a neat bush two or three feet in height, with slender green branches which afterward turn brown. The foliage is often two inches long and one wide. The racemes of flowers are conspicuous on account of the long yellow anthers projecting beyond the spreading corolla, which is pure white. Few of our hardy Ericaceous plants are more beautiful in bloom, and it is well worth a place in every garden if only for cut flowers, which appear like fairy bells. The berries are greenish white or dull red and can hardly be called edible. The fruit from North Carolina is much larger than that grown in Massachusetts. Its range is from Massachusetts to Florida.

The High Bush Blueberry (*V. corymbosum*) forms handsome clumps of shrubbery from four to ten feet high in deep swamps and moist woods, but seldom reaches more than four feet in open pastures. The young branches are usually yellowish green, turning to a light gray when old or much exposed, while the bark on old stems becomes rough and peels off in shreds. The leaves are narrow, mostly egg-shaped, often purple at the time of flowering, but afterwards becoming much broader and coarse veined. The flowers are large, white, bell-shaped, and borne on the extremity of the branches of the previous year's growth. They appear in May and early June, and the fruit is ripe from August to late in September. The latter is variable in shape, size, flavor and color. Of many well marked varieties, one has large black fruit of a pleasant acid which seems exactly the flavor to add to a bowl of new milk. Another, a large blue one, has a delicate sugary flavor. I chanced upon a bush in East Foxboro last summer which was twelve feet high, loaded with berries of a beautiful blue, rich, juicy, and half an inch in diameter, while some were even larger. In this swamp ten or twelve good forms of fruit might have been found, and by careful selection and hybridization there is no reason why the High Bush Blueberry should not become an excellent and abundant fruit, as it is more easily cultivated than any of the others. An acquaintance in Cambridge planted a few, some years ago, and now he has all the fruit he needs during the season, while during the rest of the year nothing can exceed the beauty of the shrubs. A dwarf form of *V. corymbosum* which rarely grows more than eighteen inches high has large fine abundant fruit of a bluish black color.

The Low Blueberry (*V. vacillans*) is a shrub from one to three feet high with a yellowish green stem and glaucous leaves, usually growing on high rocky ground and at the edge of woods. It bears an abundance of large sweet berries which are chiefly covered with a blue bloom, though I have found black varieties. The fruit and flowers are formed at the extremities of the last year's growth, which is from one to four inches long without leaves, so that a large part of the plant seems leafless. The ends of the branches are covered with fruit, however, which can be stripped off by the handful. As it is very prolific, the flowers of this species in May look much richer and more abundant than in any of the others. The fruit is ripe from late July to September. This plant is well worth cultivation as an ornamental shrub, and for its valuable fruit. I saw a white variety of it some years ago in Plymouth, Massachusetts.

The Low Blueberry (*V. Pennsylvanicum*) is a low growing shrub seldom exceeding a foot in height with narrow shining leaves and white flowers in early spring. This is found in immense beds in Pine woods and rocky, shady places, often covering great areas of rock when there is not more than an inch of soil, with a carpet of rich soft green which in May and June is covered with white and pale pink blossoms and in July loaded with its delicately flavored fruit. This is the first Blueberry to ripen in New England, and the early crop brings such prices that the children earn many a dollar by picking it, besides the fun of going a-berrying. These berries are somewhat easily bruised, but if carefully handled can be carried a long distance. There are several recognized varieties of this species. One is black fruited, flat at the end and much finer than the species. This might be made profitable as well as

ornamental, as it will grow under the drip and shade of trees, and on the poorest soils.

The Canadian Blueberry (*V. Canadensis*) is a dwarf shrub with light green wood seldom exceeding a foot in height, and resembling *V. Pennsylvanicum*, but with broader and more downy leaves. The fruit is blue-black and ripens later than the common Blueberry. It is not common in the State of Massachusetts, but through Vermont and parts of the British Provinces it is more plentiful and is sent in large quantities to Boston markets after the home supply is exhausted.

V. uliginosum is a low spreading shrub with glaucous foliage and blue berries which are edible but not abundant. It is a native of the high New Hampshire Mountains and northward. It is also found in northern Europe and northern Asia. It is growing well at the Arboretum.

V. cæspitosum is a minute alpine variety not more than one or two inches high.

The Cowberry, or Mountain Cranberry (*V. Vitis-Idæa*), is of neat habit, resembling miniature Box, but of a darker and more glossy green. The woody branches springing from underground shoots or stolons soon make a solid mass of rich green foliage not more than four or six inches high. The flowers are of a rosy pink, and the berry dark red and acid. They make, with sugar, a rich jelly or sauce for meats or desserts. The plant is found only in one or two localities in Massachusetts, but is more common on high mountains of New Hampshire, and in the Province of New Brunswick it covers immense tracts and in the markets of St. Johns I have seen the berries for sale by the barrel. It is also a native of the high mountains of northern Europe, where the fruit is used for jellies. It does fairly well in cultivation in a peaty moist soil.

The Common Cranberry (*V. macrocarpon*) is found in large beds on low grounds in almost every part of New England. It is a prostrate evergreen creeping along the earth or moss by fine roots. The flower stems are thrown up on slender branches, and are pale red, later becoming variegated. The fruit, usually bright red, is sometimes black. It varies much in size, shape and color, is round, pear-shaped or egg-shaped. Many varieties have been selected by the cultivators, some of which are nearly an inch in diameter. The growing of Cranberries has become in many parts of the country a great industry. Hundreds of acres of Cranberry bogs are now in preparation at an expense of from $100 to $300 an acre. Even at that price the bogs yield a good profit, often in the third year, as many as five hundred bushels being sometimes gathered from an acre of well prepared land.

The Small Cranberry (*V. Oxycoccus*) is a much smaller plant in leaf, fruit and flower. It is usually found in cold bogs. The fruit is used for the same purposes as the other Cranberries, but is seldom gathered when *V. macrocarpon* can be had. It does fairly well in cultivation, but except for botanical purposes it has little interest.

The Erect Cranberry (*V. erythrocarpon*) is a tall shrub, with reddish nodding flowers, and large black, very juicy insipid fruit. It comes from the mountains of North Carolina, and south. This shrub is scarcely hardy in the Arboretum. We have also *V. Myrtillus*, *V. Arctostaphylos* and *V. ligustrifolia*.

Other varieties that we have not yet tried may prove of interest, such as *Gaylussacia brachycera*, a very rare, dwarf, evergreen species from the mountains of Pennsylvania and Virginia; *Vaccinium hirsutum*, a small plant from the mountains of North Carolina, with neat foliage and dark colored fruit, and several others.

Jackson Dawson.

Arnold Arboretum.

New or Little Known Plants.

Amelanchier alnifolia.*

DOUBTLESS hundreds have seen and admired the bloom of our eastern Shadbush among the bursting foliage of the spring woods to one who has seen and tasted its fruit. For some unexplained reason the flowers of this species, at least in certain sections of the country, are rarely fertile, and in my boyhood the Juneberry, as the fruit of the Shadbush was called, was like a myth to me until a young tree well laden with ripe berries was brought home by a neighbor as a curiosity. The peculiar flavor of the fruit as then experienced lingers yet in memory. With the western representative of the genus, *A. alnifolia*, the case is different. It fruits abundantly, and in the region from the Rocky Mountains westward, where the supply of berries and fruits is limited to a few Raspberries, Buffaloberries, Haws, scarcely edible Currants and the Wild Cherry (of all which the last is really the only one deserving mention), the abundance and excellence of this fruit goes far in its season to make up the deficiency.

In a note which I find in the Gray Herbarium, written many years ago by the missionary, Rev. Mr. Spalding, it is stated that hundreds of bushels of these berries were dried every year for food by the Indians of the Clear Water region in Idaho.

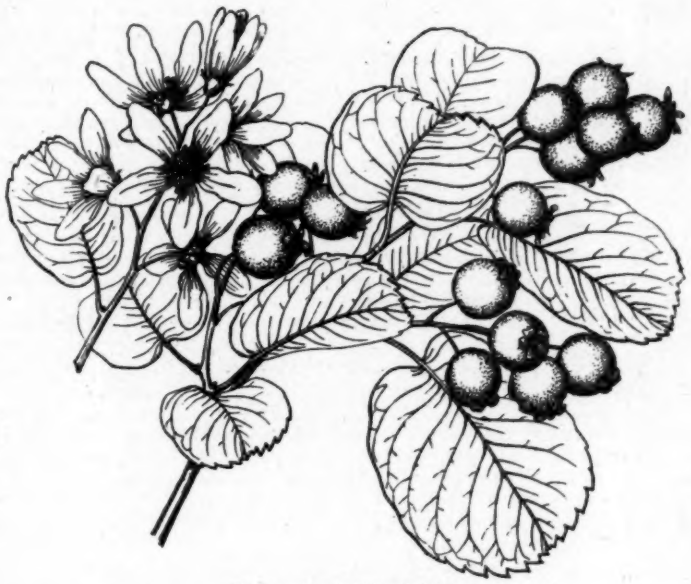


Fig. 34.—Amelanchier alnifolia.

This shrub, which is here figured, grows to a height of 6 or 8 feet, with an erect somewhat tree-like habit and dark green foliage. The leaves are rather thick and vary much in form, but are generally rounded or broadly elliptical, mostly very obtuse, or truncate, or even retuse, and coarsely toothed usually only near the summit. The flowers are usually large and showy, in short racemes, and the dark purple fruit is 3 or 4 lines in diameter, with few seeds. It is found in the mountains throughout the West, at wide extremes of altitude, from British America to California, Utah and Colorado, and from the Pacific to the Rocky Mountains, Minnesota, and Lake Winnipeg.

S. W.

Plant Notes.

Selaginella Pringlei, Baker.

THIS new rosulate Selaginella (Nos. 271 and 886 of *Pl. Mex.*, wrongly referred to *S. cuspidata*, Spring.) is abundant with *S. leptophylla* in gravelly soil of dry calcareous bluffs and ledges of the barer mountain ranges of Chihuahua. It is as much a "resurrection plant" as is its associate, which, indigenous along our south-western border, has been often described and is well known. As the atmosphere and soil become dry, these plants take the form of a ball by the curling inward over their centre of their frond-like stems. Then the cañon sides present an unsightly and desolate appearance as though strewn with dead rubbish; but an evening shower suffices to transform them into lovely banks, thickly spread with the green mats of these plants, circular in outline and of exquisite design. The new species is very distinct from its well-known congener, being of a lighter green, and having softer

*A. ALNIFOLIA, Nutt. in Journ. Philad. Acad., vii. 22. Glabrous or often more or less pubescent; leaves broadly elliptical or rounded, obtuse at both ends or rarely acute, often somewhat cordate, coarsely toothed usually only toward the summit; racemes short and rather dense; petals an inch long or less, narrowly oblong; fruit purple.

stems and spinulose leaves. For the embellishment of rock-work in regions where they would not be exposed to severe frost (though they might in colder countries be pulled up and laid away for the winter on a dry shelf), these radiate-stemmed Selaginellas may be made of great service. *C. G. Pringle.*

No true Water Lily (*Nymphæa*) was known to the flora of Pacific North America until June of last year, when Mr. John B. Lieberg discovered in a pond in northern Idaho a very pretty and distinct species that Mr. Thomas Morong, in the May issue of the *Botanical Gazette*, describes under the name of *Castalia* (the name which some botanists are anxious to see adopted in place of *Nymphæa*) *Liebergi*. It is a diminutive plant with white odorless flowers about an inch and a half in diameter when fully expanded. Mr. Morong points out the resemblance of the Idaho plant to *Nymphæa pygmæa*, a native of Siberia, China and Japan. The extension of this genus into western America is a fact of no little interest from the point of view of geographical botany.

A Sonora Hillside.

THE illustration on page 187 will give our readers a pretty accurate idea of the general appearance of much of the desert country in southern Arizona and the adjacent parts of north-western Mexico. It represents one of the low, granite foot-hills of the Sonora Mountains near the head of the Gulf of California. This is one of the most barren and inhospitable regions of the North American Continent. For fifty miles inland from the Gulf, sandy plains, which near the coast are shifting sand-dunes, alternate with numerous chains of low mountains trending with the coast—vast piles of volcanic rock, sprinkled over with a little fine soil. These desert mountains are absolutely treeless except in occasional cañons, where a little soil, washed down from the slopes above, has enabled the Mesquit and the Ironwood (*Olneya*) to obtain a foothold, and to drag out a miserable existence. The base of these forbidding mountains, and the lower hills and broad, gently swelling *mesas* which support them, are covered with more soil than the higher slopes, and produce a striking and extremely interesting Cactus vegetation. Mr. Pringle, almost at the peril of his life, and only with great suffering to his animals from scarcity of water and absence of forage, made a careful botanical survey of this region during the summer of 1884, and our illustration of a Sonora Hill is from one of a series of photographs which he was able to make during this journey. The tall, grotesquely branching cylindrical plant scattered over the hill is the *Suwarrow* of the Mexicans (*Cereus giganteus*), the tallest of the Cactus family, often exceeding a height of sixty feet, with a diameter near the ground of two feet. The handsome white flowers appear only at the very top of the tall shaft, and quite encircle the summit. The skeleton consists of a number of stout perpendicular ribs, only slightly attached together, and composed of hard, solid and durable wood, upon which time and exposure seem to make very little impression. They may be found scattered about on the desert, where the plants have died or been cut by Indians in order to secure the edible fruit. The fleshy covering soon disappears by decay, but the skeletons remain hard and sound. They afford the best material produced in this region for the rafters of huts or for small posts, and the Mexicans gather them in large quantities from the desert for these purposes. The stiff, rigid clumps among the *Suwarrow* on the hillside are plants of another large Cactus, widely branching at the ground from a single crown—*Cereus Thurberi*—one of the interesting discoveries of Dr. George Thurber, who, as botanist attached to the United States and Mexican Boundary Survey Expedition, first explored what is now the extreme southern portion of Arizona, and parts of Sonora. Although closely allied to *C. giganteus*, *C. Thurberi* is a much smaller plant, the clustered stems rarely rising to a greater height than fifteen feet. The flowers, like those of *C. giganteus*, are greenish white, but the tube is narrower and more elongated, and they appear, not at the summit of the stem, but in a circle about one foot below it; and the fruit, like the ribs of the stem, are thickly beset with clusters of black spines. It was found also by Mr. Schott in Sonora, shortly after its discovery, but from that time (1851) was not seen again in a wild state by any botanist until Mr. Pringle visited this part of Mexico in 1884. *Cereus Thurberi* was at one time in cultivation from seed brought home by Dr. Thurber, and it may still be found, perhaps, in some of the European collections. There seems to be no record, however, of its flowering in cultivation. The large Cactus with tall, cylindrical stems in the lower left-hand corner of the picture is another Cereus (*C. Schottii*), a plant which, from a widely branching or stoloniferous base, throws up numerous stems, ten to fifteen feet high, and six inches in diameter. They are five to seven angled, armed in the sterile part of the plant with short, and on the fertile upper branches with long, pendulous spines, which form a reddish gray beard, in which the flesh-colored flowers and oval, purple fruit are hidden. There are scattered over the hillside, too, numerous dwarf specimens of a leguminous plant, *Parkinsonia microphylla*, which, under more favorable climatic conditions, sometimes attains the habit and the height of a small tree, and of *Bursera microphylla*, both plants able to put forth and maintain their minute leaves during a few weeks under the burning Mexican sun, which here so heats the rocks in summer that the human hand cannot bear contact with them. The large bush in the lower right hand corner is a small plant of the so-called Green-barked Acacia, the *Palo Verde* of the Mexicans, one of the most conspicuous plants of the desert, and, next to the Mesquit, the most familiar, perhaps, to travelers in the whole Boundary region from Texas to California. The *Palo Verde* sometimes becomes a tree of considerable size; and it is always a most striking and conspicuous object owing to the perfectly smooth, light, bright-green bark which covers its stem and branches. It remains throughout the long, dry and heated season perfectly leafless, but with the midsummer rains puts out tiny leaves, and soon becomes brilliant with a profusion of handsome, bright yellow, pea-like flowers. *C. S. S.*

Cultural Department.

Annuals for a Succession of Flowers.

GARDENS should now be bright and gay; every empty spot should have been filled and planting should have been finished. But there will soon come a time when many gaps will occur, and it concerns us now to prepare material with which to fill them. Many annuals are of brief duration. Among these are Nemophila, Collinsias, Virginian Stocks, Clarkia, Lupins, Poppies, Hawkweed and Ten-week Stocks. After a few months many annuals—for instance, Drummond Phlox, Gaillardias, Zinnias, Mignonette, and many more—lose their trim shapes, and it is best to clear them away and recover the ground with fresh plants. When Hollyhocks, Larkspurs, Foxgloves, Canterbury Bells and Sweet Williams have done blooming and are rooted out or cut away, something is needed to occupy the space they filled.

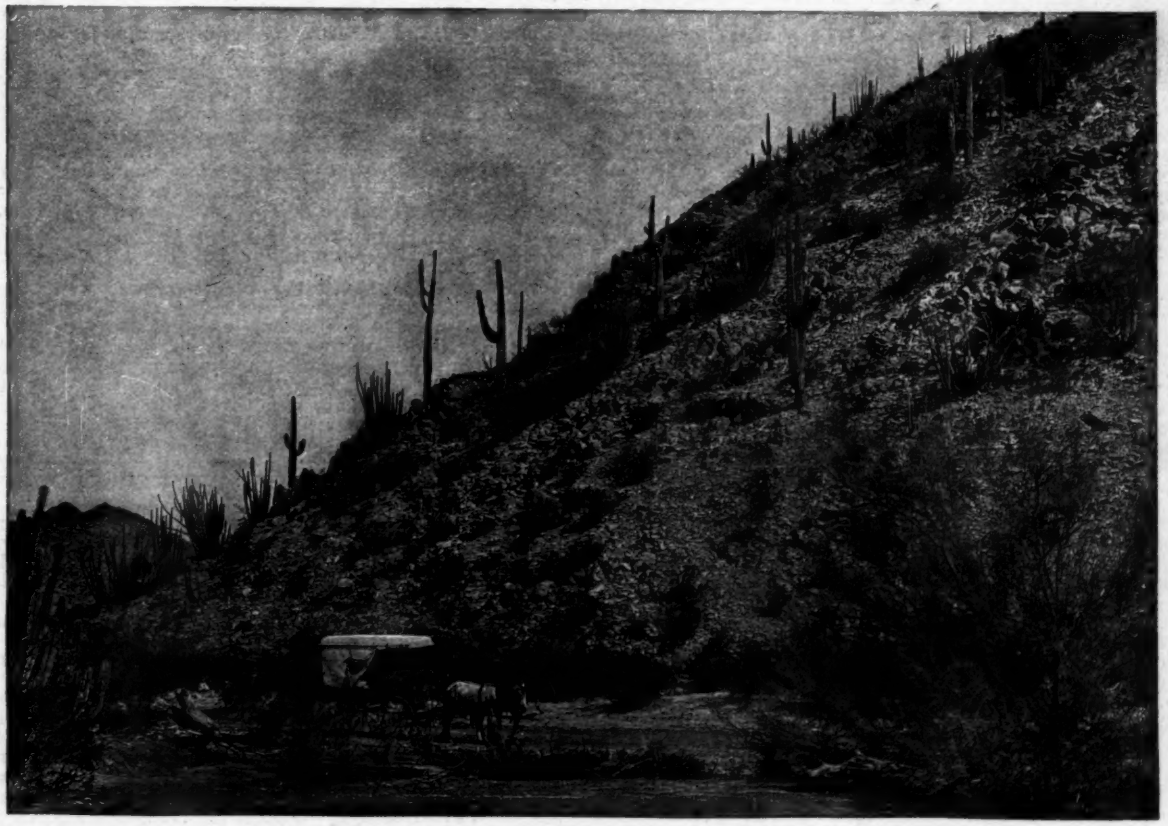
To keep the garden filled, sow at once a fresh set of annuals, and keep them ready to fill up empty spaces as they occur. African Marigolds (the Eldorado strain) are capital for filling into places recently occupied by other plants, and they will keep in bloom till frost destroys them. The cucumber-leaved Sunflower (*Helianthus cucumerifolius*) and *Cosmos bipinnatus* may also be used in the same way. The latter, however, should be grown and starved in pots till its flower buds are set before it is planted out. Raise some fresh dwarf French Marigolds and Petunias to plant in dry ground, as these thrive in such places where many other annuals would perish. Snapdragons in bloom now if cut back would bloom again in the fall, but not in such perfection as young plants raised now from seed. China Asters from seed sown now will bloom in September

and October. Zinnias raised now give fine flowers from August onward. *Coreopsis coronata* and *C. Drummondii* are bright and beautiful yellow-flowered Composites, and should be used liberally for late flowers. About the end of July mildew usually injures spring-sown Drummond Phlox, and good young stock should be provided to replace the old. Put in now a sowing of annual Candytuft and another a month hence. Seeds of *Gaillardia picta*, and its variety *Lorenziana*, sown now will take the place of early spring stock. Corn Flower raised now will bloom freely before the summer is over, so will Balsams, annual Chrysanthemums and Mignonette. The dwarf Nasturtiums are very good in their way, but Lobb's varieties continue in good blooming condition longer than any of the annual sorts. Potato beetles are apt to attack *Nicotiana affinis*, and destroy its beauty before the summer is over. It is well to raise a lot of young plants now, for it is one of the most generous and fragrant of night-blooming plants. In fact, any annual that will bloom within three months from sowing, may be raised from seed sown by mid-June for service in the fall.

At this time of year it may be well to sow these annuals in a small plot of ground specially reserved for them, in soil which should be moderately moist and very mellow. From this seed bed the seedlings may be transplanted as required. Should warm, dry weather set in, seeds are likely to lie dormant in the ground till after the next soaking rain, but in the case of these succession-crop annuals we cannot afford this inactivity, and they should be kept watered, and, if need be, slightly shaded until after they germinate. In preparing the ground for fine seeds to be sown in summer, in the event of warm, dry weather, it is well to give the ground a thorough soaking with water the day before it is dug, mellowed and sown, rather than to prepare the ground while it is dry, and sow the seeds and water afterwards.

Seeds sown in rows are easier cared for than those sown broadcast, and give a better chance for using a small hoe between them. Seedlings should not be allowed to grow up thickly in the rows, but should be thinned to prevent spindling growth. And if they cannot be set out permanently as soon as they are large enough for transplanting they should be pricked off into other temporary beds, to keep them stocky and cause them to root well and to be in better condition for planting. *W. F.*

The Plum and the Curculio.—The plum is generally considered one of the most delicious of the stone fruits, and many persons prefer it to any other product of our orchards. It certainly would be found oftener in home fruit-gardens but for the fact that the curculio has been so destructive. Occasionally, fine fruit is raised in small quantities, with no other precaution than keeping poultry in the yard with the trees. It has long been known, too, that the curculio cou'd be conquered by suddenly jarring the trees every morning, when the insect, inactive and unable to fly, drops into a sheet and is destroyed. This, however, is a tedious process, and a simpler remedy has long been desired. This seems to have been found in the application of arsenical poisons in a spray, by means of a force-pump with a nozzle which throws the poisoned water over the tree in a fine mist. The process was described in the first number of this journal, and it only needs to be added that it is not yet too late to save the fruit, as the insect is just beginning to work on the young plums. Of the forms of arsenic used, London Purple seems preferable to Paris Green, being cheaper and less liable to injure the foliage of the tree. It is also in a finer powder, and therefore more easily kept in suspension in the water. Three-fourths of a pound to eighty or one hundred gallons of water is considered a good proportion. The greatest caution should be used with poisons of this kind. The hands of the operator should be protected, and neither horses nor men should be allowed to breathe the vapor. Grazing animals should be kept out of the orchard for some time. If a heavy rainfall, soon after the application, should wash off the poison, a second application may be made. All who have tried this method unite in saying that no danger can come from eating the ripe fruit, as the small amount of poison lodged upon it is dissipated before it matures.



A Sonora Hillside.—See page 186.

In a paper read before the Illinois State Horticultural Society last winter, Mr. D. B. Wier held that the curculio prefers to deposit its eggs in the fruit of the native plums. He therefore advocates the planting of native varieties among the trees of foreign origin. His claim is that the insects will not only pass by the latter trees for the former, but that a large percentage of the eggs deposited in the native fruit will fail to develop, so that the increase of the pest will be held in check. Another old remedy is dusting the trees with air-slaked lime. It is reported in the bulletin of the Ohio Experiment Station for May, that orchards treated in this way in Michigan have yielded abundant fruit. The lime is applied by means of a flat paddle from a barrel in a wagon which is driven along the rows of trees on the side towards the wind. The lime can also be mixed with water and applied in a spray. This last method has been practiced near Boston with remarkable success. *S. A.*

Orchid Notes.—*Cattleya Skinnerii alba*, a lovely variety, bearing snow-white flowers with just a few purple stripes in the throat, is a native of Costa Rica, and to be well-grown needs more heat than is usually accorded the type. It delights in abundance of water, both overhead and at the root, during the growing season, and requires a long season of rest, in a cool, dry house. One plant now in bloom here is bearing 25 flowers on two spikes, and they will last a month in perfection, forming the chief attraction of the Cattleya House. *Cattleya Wageneri* is a very rare and chaste var. of *C. Mossiæ*, bearing pure white flowers, with a dash of lemon at the base of the large open lip. A superb form is now in bloom with us, the flowers being fully 9 inches across and of good substance. This plant is doing unusually well in a basket filled entirely with sphagnum moss, a capital potting material for most Orchids when care is taken that it does not become saturated with water. A thorough soaking about once a week is often sufficient. *Miltonia* (*Odontoglossum*) *vexillaria* will soon be at its best, and may now be seen in abundant varieties. Among the choice of these may be noted var. *rubella*, with flowers of deep rose; var. *leucoglossa*, pale rose, with a large pure white lip; var. *Hilliana*, with large rose-colored flowers, dotted and striped with dark purple; var. *superba*, a deep colored form, the base of the lip being white, with radiating crimson lines. This Orchid is probably the most beautiful of the Miltonias or of the Odontoglossums, to which genus it was formerly referred. Unfortunately it is seldom seen in good condition in this country. In many instances the cause of this is too little water, as may easily be seen by their starved and thrips-eaten condition.

Thrips has always been the pest of this species and will be sure to appear whenever the watering is neglected. The plants should be watered at least once a day and always from overhead. During the hot summer days or when the firing is heavy in winter it may be necessary to syringe the foliage a few times. Under this treatment thrip never attack the plants here. In respect to heat we try to keep a temperature of 60°—65° the whole year round. We use peat and moss in equal parts for potting, particular attention being paid to drainage. Under the above treatment these Orchids grow like weeds, producing 3 to 4 spikes of flowers from a bulb and increasing the number of leads and size of bulbs every year.

Kenwood, N. Y. *F. Goldring.*

Staking Plants.—Hollyhocks, Dahlias, perennial Larkspurs, Bottonias, Sunflowers and many other tall-growing, top-heavy plants, will need staking. Never wait till the plants grow large and are blown over or broken down, but stake them before they need support. Once the stakes are set, it is an easy matter to tie up the plants occasionally, and in this way to preserve their good form. Use neat stakes, but strong ones, and firmly set. A large Dahlia, heavy with rain, will require a strong support in a high wind. Chestnut, locust and red cedar stakes worked at the saw-mill in suitable lengths, and from one to two inches square, and with the sharp corners planed off, can be used for tall, heavy plants like Dahlias and Sunflowers and for young trees. Good stakes can also be made from the refuse yellow pine which can be procured at many saw-mills. Such heavy and stiff stakes are not best for tall Lilies like *L. auratum*, *L. superbum* and others, which grow from five to nine feet high, but long, strong, elastic stakes are preferable. These sway a little in the wind with the plant, and at the same time are perfectly secure, and for this purpose there is nothing better than Red or White Cedar saplings such as are used for bean-poles, slender and neatly dressed. Almost any stake does for smaller plants, although the cane stakes so much used by florists are not of much value in the flower garden; they rot off in the ground too quickly. But whatever is used should be neat, and firmly set, and, if the plants are in rows, accurately in line. The plants should grow higher than the stakes, and they should be so tied as to hide them, and at the same time not to appear as if crushed or in an unnatural position. *W. F.*

The Rock-Garden in Spring.

TULIPS are still conspicuous among the plants flowering this week in the New England rock-garden. The most beautiful of them is the Lady Tulip of gardens, *Tulipa Clusiana* (also known as *T. præcox* and *T. rubro-alba*), a common plant from Portugal to Persia, and one of the most clearly marked and least variable of all the Tulips. It has linear, acuminate, channeled, glaucous leaves, a slender flexuous stem, twelve or eighteen inches high, and a delicate white flower two inches long, the narrow segments marked on the inside with a handsome purple spot, the three outer flushed externally, except along the edges, with bright red. The anthers and filaments are dark purple or nearly black. The flowers of *Tulipa acuminata*, or, as it is often known in gardens, *T. cornuta*, are always striking and interesting. They are sometimes scarlet and sometimes yellow, and these colors are sometimes blended. The segments are very long, and all are narrowed gradually into a long, narrow, horn-like point. This is a very old inhabitant of gardens, and a very distinct type, but its native country is not known. It is very hardy here, and one of the most easily cultivated of all the Tulips. *Tulipa reflexa* is also in bloom. This is another Tulip which is only known in gardens, and which, as Mr. Baker has suggested, is probably a hybrid between *T. acuminata* and *T. Gesneriana*. It has handsome bright yellow flowers, two and a half to three inches long, the segments narrowed gradually to an acute point and sharply reflexed above the middle when the flower is fully expanded. Among our native Violets worthy of a place in the garden is *Viola pubescens*, the common yellow Violet of northern woods, with broadly heart-shaped, downy leaves, and rather small bright yellow flowers, which continue to appear during several weeks. It takes kindly to cultivation, thriving in the shade, and is springing up everywhere in the rockery from self-sown seed. The Pepper-root (*Dentaria diphylla*), another inhabitant of northern woods, probably is not seen very often in gardens, where, however, it can well fill some shady nook or pocket in the rockery. It has large compound leaves, with three rhombic-ovate, coarsely cut leaflets and short racemes of rather large white flowers. The long, fleshy, toothed root-stock peculiar to the plants of this genus of the Mustard Family (*Cruciferæ*) have a pleasant pungent flavor, to which they owe their common English name. Another pretty shade-loving native plant now in flower is *Waldsteinia fragoides*, a low perennial herb, with leaves divided into three cut-toothed lobes, and small bright yellow flowers, in size and shape not unlike those of the Strawberry, but produced upon many-flowered scapes rising above the foliage.

Gardeners hardly realize or appreciate the beauty of our North American Lady Slippers (*Cypripedium*), and yet among them are plants as showy and far more delicate and beautiful than any of the tropical species in which the horticultural world is just now so deeply interested. All the species of the Eastern States are perfectly hardy and can be grown as easily as any of the more delicate of our wild plants. They will thrive, with the exception of *C. acaule*, which requires drier soil and a more sunny exposure, along the margins of Rhododendron beds in peaty loam, or in the shady and least dry parts of the rock-garden. They are easily transplanted and make excellent pot-plants, if needed for the decoration of conservatories or living-rooms. The only one of these interesting plants blooming here now is the larger of the two yellow flowered species, *C. pubescens*. It has stems two feet high, pubescent like the broadly-oval, acute leaves, and handsome flowers, with a pale yellow gibbous lip, and long, linear, twisted petals. It is the common bog species north and west, and is found also on the Alleghany Mountains.

Varieties of *Iris pumila*, with bright-blue and with yellow flowers, are now in bloom. It is a dwarf European species, three or four inches high, with large solitary flowers, well suited to the rock-garden, and an excellent subject for a dwarf edging to the herbaceous border. The dwarf Iris is very hardy, and spreads rapidly, soon making broad, dense mats. Not less beautiful is the crested dwarf Iris of the southern Alleghany Mountains (*Iris cristata*), a low plant, with leaves only three or four inches long, and very handsome, light blue flowers, with a long, slender tube much longer than the short-clawed divisions of the perianth, of which those of the outer series are

beautifully crested. This is a hardy plant, spreading rapidly by creeping root-stocks, and admirably suited for the border of wood-walks and other rough parts of a garden, where it can more than hold its own against weeds and grasses.

Arnebia echinoides is one of the most showy of the hardy perennials now in flower. It is a native of Armenia and a member of the Borage Family, nearly allied to *Lithospermum*. The stems, which grow from six to twelve inches high, are terminated by large, one-sided, solitary spikes of handsome, primrose-colored flowers, marked at first with purple spots in the sinuses between the lobes of the corolla, but which entirely disappear at the end of a few days. The sessile, alternate leaves are ciliated on the margins like the stems. *Arnebia echinoides* may be increased from cuttings made from the stems and from the roots, and it is easily raised from seed.

Aubretia deltoides is one of the prettiest of hardy, spring-blooming rock-plants. It is an evergreen trailer, with terminal few-flowered racemes and small rhomboidal leaves, which just now is covered with sheets of handsome, pale purple, four-petaled flowers, half an inch across. It requires deep soil and rather an open exposure, where it can spread through the crevices between the rocks and send its trailing stems over their surface. It can be easily increased by cuttings and from seed, which, if sown as soon as ripe, will make strong flowering plants by autumn.

Scilla Hispanica, or, as it is generally known in gardens, *Scilla campanulata*, is the latest of the genus here in flower, blooming with the Poet's Narcissus, the two being excellent plants to associate together in beds or wild wood-borders. The flowers are deep blue, bell-shaped, half an inch deep, racemose, and spreading nearly at right angles from the slender six to twelve flowered scape, which is eight to twelve inches high, and springs from a rosette of linear strap-shaped leaves. There are varieties with white and with flesh-colored flowers. It thrives in dry and in comparatively wet soil; and it is one of the best of the hardy bulbs which can be naturalized here in grass along the borders of woods and wood-walks.

Ornithogalum nutans, the Satin Flower of some old New England gardens, is such an old-fashioned flower that few people nowadays know it. And yet it is a beautiful and a very hardy plant, which has been growing in this garden for over forty years; and during all these years its modest flowers have given fresh and ever increasing delight. It is a bulbous plant of the Lily family, a native of southern and central Europe, with four or six strap-shaped, flaccid leaves, and a loose raceme of five or six large, nodding, bell-shaped flowers. They are an inch long, with broad, petaloid filaments; the segments of the perianth are white, broadly flushed with pale green on the outside, smooth and shining like satin, and less spreading than in other species of this genus. The Satin Flower flourishes in all soils, in the full exposure to the sun and under the dense shade of overhanging trees and bushes.

Among Pæonies the earliest in bloom is one of the single-flowered forms of *P. tenuifolia*, with rather broader leaf segments than are found in the typical plant. The single-flowered variety of this handsome south Russian plant is much less often seen in gardens than that with double flowers, although it is certainly far handsomer and more attractive; and this is true of all Pæonies, whether herbaceous or shrubby, that the single are handsomer than the double flowers, although double-flowered varieties are almost invariably grown in American gardens. *P. tenuifolia* produces solitary, dark crimson, cup-shaped flowers, surrounded by the crowded, reduced upper leaves, terminal upon stems twelve to eighteen inches high; the leaves, of which there are ten or twelve upon each plant, are cut into narrow, one-nerved, confluent segments, which vary in width from one-twelfth to one-fourth of an inch in different varieties. *P. tenuifolia* is a perfectly hardy plant of the very easiest cultivation.

Boston, May 25th. *C.*

Notes from the Arnold Arboretum.

THE number of plants in flower in the Arboretum this week is not large. Among the Barberries, one of the earliest in bloom is the form of *Berberis vulgaris* from northern China and Manchuria—the var. *Amurensis*, or *Berberis Amurensis* of some authors. Of the many forms of the common Barberry now cultivated this is one of the most distinct, interesting and valuable from a garden point of view. The leaves are much larger than those of the common Barberry and the stems are stouter and more rigid, although the Chinese plant will not attain probably its height and dimensions. Indeed, Maximowicz, in his "*Flora Amurensis*," describes it as a low shrub, rarely more than three feet high, a stature which the Arboretum plants have already surpassed. The flowers are somewhat larger than those of the common Barberry, possessing their delicious fragrance, and appear here fully two weeks earlier. This is one of the most desirable of the perfectly hardy deciduous shrubs of comparatively recent introduction. It is a free-growing plant which can be readily increased by cuttings or division, or from seed, which has not been produced yet on the plants in this collection.

Every lover of nature in America, and nearly every gardener, knows the Great Laurel, or, as the people who inhabit the southern Alleghany Mountains, where it grows with a perfection and beauty unknown elsewhere, call it, the "Ivy," but the little northern Swamp Laurel, *Kalmia glauca*, is less known. It is, nevertheless, when in flower one of the handsomest of the small shrubs of North America, where it is found from the Pennsylvania Mountains far northward, always in cold peat-bogs. *Kalmia glauca* rarely exceeds a foot in height; it has a loose straggling habit, narrow sessile, oblong, revolute leaves, white glaucous on the lower side, and terminal, few-flowered, smooth corymbs of large and very showy lilac-purple flowers. It is not an easy plant to establish in cultivation, although when once established and left to grow without any effort being made to improve its habit by pruning (which seems fatal to it) it will flower freely year after year. Great care is needed in taking up young plants for cultivation, which should be thoroughly rooted in pots or boxes before they are planted in the garden. *Kalmia glauca* is now well established in the Arboretum, where it has flowered for several years.

Much more easily cultivated is the beautiful Rhodora, which botanists now refer to the genus *Rhododendron*, as *R. Rhodora*. The Rhodora which is one of the best known and best loved wild flowers of New England, can be easily transferred to the garden from the cold northern swamps, which at this season of the year are tinged with its handsome rosy flowers. It is a low deciduous shrub, two or three feet high, with oblong leaves, downy on the lower side, and appearing later than the umbel-like terminal clusters of flowers. It requires a deep peaty soil, in which it will soon spread, and make large clumps.

Fothergilla alnifolia is too rarely seen in gardens. It is a low and very hardy shrub belonging to the Witch-hazel family, with showy terminal, catkin-like spikes of small flowers, with numerous long, projecting white stamens. They are the only conspicuous part of the flower. It has no petals and a small bell-shaped calyx. The oval or obovate leaves, smooth, or pubescent on the lower side, appear later than the flowers. The Fothergilla, although not found growing naturally anywhere north of Virginia, is perfectly hardy here.

Clematis (Atragene) verticillaris, a rare plant confined to the mountainous or far northern part of the country from northern and western New England and Virginia to Wisconsin, is the earliest of the genus in flower here. It is a woody climber with stems six or eight feet long, trifoliate leaves, and large, handsome blue or purple spreading flowers, two or three inches across, which in the mountains appear sometimes with the melting snows. This plant requires ordinary garden soil, and no special cultivation.

The earliest of the brambles in flower is also an American plant—*Rubus triflorus*, the dwarf wild Raspberry of northern swamps and woods, with annual herbaceous stems six to twelve inches high, handsome ovate-lanceolate, doubly-serrate leaves, pointed at both ends, and one to three flowered clusters of white flowers followed by small inedible fruit. It is an exceedingly pretty little species, which, when established, makes a neat compact mass of foliage, well worth a place on the borders of the shrubbery.

Ribes multiflorum is a Hungarian species rarely seen in gardens. It is a handsome shrub at this season of the year, with numerous upright and spreading branches three or four feet high, long-petioled, three or four lobed leaves, which are dark green and glabrous above, lighter green and very pubescent on the lower side; and long, dense, pendulous racemes of green flowers. The fruit is red and about the size of a pea. The plant, although more interesting than showy, might well be cultivated more frequently. A beautiful figure of it (*t.* 31) will be found in Lavallée's "*Icones*."

Ribes Uva-crispa is a smooth-fruited plant which botanists consider one of the wild forms of the common Gooseberry. It is a low shrub with rigid branches two or three feet high, densely armed with stiff yellow prickles, small, orbicular, palmately divided leaves, hairy on both sides, and with green flowers, hanging singly or in pairs from little tufts of green leaves. The berry is small and yellowish. It is found in hedges and open woods of central and southern Europe and

western Asia, and has been cultivated for centuries for its fruit. A plant of the America Red Currant (*Ribes rubrum*) is a beautiful object in flower. It is not considered distinct from the garden Currant of Europe, although the veins of the leaves are white beneath, which led Michaux to apply to the American plant the name *albinervum*, and the yellow-green flowers are larger and more conspicuous than those of the European Currant. The stems are straggling or reclined and three to five feet long. The wild Red Currant is an inhabitant of cold bogs and woods from northern New Hampshire and far northward. *Ribes floridum*, the wild Black Currant of our northern woods, is in bloom also, and resembles the Black Currant of gardens. It is a shrub three to five feet high, with heart-shaped, lobed, resinously dotted leaves, drooping racemes of large and handsome greenish or white flowers, and black berries with the smell and flavor of those of the garden plant. These two wild American Currants probably will not be often found in those gardens where plants of merely botanical interest are not cultivated.

The Corchorus (*Kerria Japonica*), with its bright yellow and very double flowers, is almost invariably found in old country gardens in the Northern States, but this plant in its natural state with single flowers, each with five petals and numerous stamens, is still rare. It is, however, a far handsomer and more desirable plant. The Kerria is a shrub five or six feet high, with slender, virgate, flexuous stems, and ovate-lanceolate, longly acuminate, doubly serrate, deciduous leaves, rounded or subcordate at the base, and solitary flowers terminal on short lateral branches (in the single form wide spreading, an inch and a half across) and appearing with the leaves. The fruit has probably never been produced in this country, and according to Von Siebold it rarely ripens in Japan, where the plant is everywhere cultivated, and now widely distributed in a semi-wild state. It is found in the mountainous regions of central China, and like the Ginkgo and several other plants, for many years known to Europeans from Japan only, it is probably a native of that country. In central China the fruit is reported to be "yellow and good to eat like a Raspberry," the Chinese name indicating that it produces an edible berry. The single and the double flowered forms are beautifully figured in Siebold and Zuccarini's "*Flora Japonica*," *t.* 98.

Daphne Genkwa is another Chinese plant long cultivated in Japan, and first made known by Von Siebold, who found it in Japanese gardens and described and figured it in the "*Flora Japonica*," *t.* 75. The Genkwa is a handsome and interesting shrub with spreading tortuous branches covered at this season of the year with sessile lateral fascicles of two to seven handsome, tubular, lilac-blue, precocious flowers about an inch long, the tube, like the ovary, densely coated on the outside with silky hairs and quite smooth within. The leaves, which appear sometimes later than the flowers, are opposite, membranaceous, short petioled, about an inch long and quite entire. The Genkwa is very generally cultivated in Japan, both on account of the beauty of its flowers as an ornamental plant, and for the flowers and bark, which are believed to possess valuable medicinal properties and are frequently used and highly esteemed by the Japanese. *Daphne Genkwa* is not very hardy here, and like nearly all the other species of the genus in the collection, requires in winter a slight protection of evergreen branches.

Daphne Cneorum, a trailing evergreen shrub of central and southern Europe, with tough, wiry stems, smooth, lanceolate, glabrous leaves, and terminal clusters of bright pink, deliciously fragrant flowers, is now in bloom. It is a free blooming plant, but not very hardy nor satisfactory in this climate. Sometimes it grows well for a number of years, forming wide, handsome mats, and then, in a winter apparently not more severe than those which have preceded, it dies, or is seriously injured. In some exposures and situations it appears to do best when unprotected in winter, in others a covering of evergreen branches appears beneficial. It is well worth all the care and attention necessary to secure its free growth and abundant flowers.

Two Spiræas in addition to the two mentioned in the last issue of these notes are now in bloom, *Spiræa media* and *S. hypericifolia*. The former is a tall, erect shrub with round branches, flowering after the leaves have attained their full size. They are elliptical, acute and obtuse, entire or sometimes deeply serrate at the end, three or four ribbed, smooth above, hairy on the lower side and on the margins. The handsome, many flowered corymbs terminal on lateral, leafy branches of the year are produced in great profusion, for a distance of two or more feet along the ends of the main branches. *Spiræa media*, which is often confounded in gardens with *S. chemædryfolia*, which has square branches and smaller and more generally serrate leaves, is one of the best of the early flowering Spiræas here, of its section. It is very hardy, grows rapidly in all soils and it can be transplanted with the greatest ease. It is found in Hungary and southern Russia, and through Siberia to Kamschatka and Mongolia. *Spiræa hypericifolia*, known sometimes in gardens as Italian May, or St. Peter's Wreath, is a tall shrub with long, slender, flexuous, round branches, small, wedge-oblong leaves, entire or slightly crenate or lobed at the end, and small white or cream-colored flowers in nearly sessile lateral umbels, terminal on very short leafy branches. A variable species, of which several forms are distinguished, it is found from western Europe through Siberia to Mongolia.

May 25th. *J.*

The Forest.

Forest Trees for California.

IN the second number of Garden and Forest I mentioned the "English" Oak (*Q. Robur pedunculata*) as a promising timber tree for California. The facts thus far gathered concerning this rather unexpected adaptation are these: The acorns of this Oak (from a tree in New England) were first planted on the experimental grounds of the University in 1879, with a number of species of eastern Oaks, which were increased in succeeding years. All of these, however, were found to be of exceedingly slow growth, showing little or no inclination to utilize the long growing season of California. After two years' growth none of the American Oaks had attained a greater height than eighteen inches, the average being from eight to ten only. Of the European Oak seedlings, none measured less than twenty inches, and a number were three feet in height, with strong branches. Attention having thus been called to the possible importance of this tree for California, several importations of acorns were made subsequently, and these, with seedlings a year old, were distributed for trial to numerous localities in the State.

Unfortunately, but few of these seem to have found favorable conditions for their prosperity, from causes sufficiently apparent from the experience had upon the University grounds themselves. It was found, first, that the acorns were extremely attractive to all sorts of depredators, including blue jays, rats, gophers (*Thomomys umbrinus*) and ground squirrels (*Spermophilus fossor*), and that, therefore, but a small percentage of the acorns sent out ever germinated. Those that did germinate, however, were reported to be growing thriftily and rapidly. How long they continued to do so, will have depended largely upon the protection afforded them from cattle, which seem to be as fond of the foliage as the other animals mentioned are of the acorns; moreover, the ground squirrel and gopher delight in gnawing the roots and trunks as well. But few of the trees escaped mutilation from one or the other cause, and even the one which is the best representative of the stock grown by the University experiment station, now beginning its seventh year, lost fully one season's growth, being weakened by removal and having been bitten off by a horse. It thus shows properly the result of five years' growth only. It is now sixteen feet high, with a trunk six inches in diameter a foot from the ground, and separating at three feet into three branches, forms a spreading top, fourteen feet across. The tree has now set an abundant crop of acorns, and a seat is made around it, the occupants of which will be fully shaded during the warm hours of the day.

A Black Oak (*Q. tinctoria*) of the same age and grown without any interruption, is a bush scarcely six feet high and having as yet no aspirations to become a tree. Its growth is about the best among the eastern Oaks.

Two species of Hickory (*Carya porcina* and *C. tomentosa*), also contemporaries, have as yet hardly risen above four feet, and, like many eastern trees, show their aversion to the climate by sending up suckers from the base as soon as the shoots of the previous year have made a growth of a few feet.

This enormous difference in favor of the European Oak seems partly, at least, due to its peculiar root habit. A seedling a year old, appearing above ground with a stem the size of a goose quill at the base and six to eight inches high, will show a straight tap root three to four feet long and one-third of an inch thick near the crown. It thus quickly reaches a depth in the soil where moisture is found during the whole of the rainless summers of California; and hence, doubtless, its vigorous growth during the entire long growing-season, the leaves remaining active from after March to the end of October. The latest leaves, however, belong almost entirely to the second growth, which pushes out very vigorously toward the end of June, and frequently reaches a length of four feet before the end of the season.

But all this is very much changed when the tap root has been seriously shortened, or destroyed in transplanting. The European Oak then assumes the habit of root, as well as of stem, exhibited here by the eastern Oaks, and its growth becomes equally slow. Some two-years'-old seedlings, transplanted from the nursery to the brow of a dry hill above the University, show this to perfection. The tap roots having, of necessity, been badly mutilated, fibrous roots branch out from the stump, but have thus far, in two years, been unable to reach the moist depths of the very rich soil. They have not only no second growth, but no tendency even to form a definite trunk; the branches tend to spread out low, and between them, crops of suckers rise from the base of the stem at the time when the standard trees begin their second branch growth. These weakly shoots form the next year's branches, while the larger ones frequently die back. This curious habit, resulting in the formation of low, scraggly bushes, instead of stately trees, is just what is shown here by the Oaks of the Mississippi Valley when left to themselves; and the unlooked for resistance of the European Oak to the severe drought of the California summer, as well as its surprisingly rapid development, thus seems to find a simple explanation in the peculiar habit of its root to push down into the moist soil the very first season. It would be interesting to know whether in its native country, or in the region of summer rains in the United States, it exhibits a similar tendency.

Thus, while this Oak promises excellent results as a timber tree, not only for California, but, doubtless, *à fortiori*, for Oregon, its propagation evidently requires considerable care. The acorns must either be planted where the trees are to stand, or transplanting must be done while the seedlings are quite young, and with great care not to mutilate the tap root. Both acorns and seedlings must be fully protected against animal depredations, especially against the rodent family, and later, as saplings, against ranging cattle and horses.

But if, as may reasonably be hoped, these precautions will insure to the Pacific coast a supply of hard-wood timber that will do away with the heavy cost now involved in the importation of this necessary material, the labor will be amply repaid. It may be objected that with such rapid growth, the timber may not possess the same qualities as in its native climate. But when it is considered that the more rapid growth is accomplished in a proportionately longer space of growing time, this apprehension loses much of its force; and it is not at all probable that the English Oak, with a habit so widely different from that of the native Oaks of California, should produce a wood of a quality so inferior as theirs.

University of California, May, 1888. *E. W. Hilgard.*

Correspondence.

To the Editor of GARDEN AND FOREST:

Sir.—Is there not some way of inducing the guardians of the Central Park to remove the hundreds—indeed thousands—of dying Norway Spruces which so seriously deface its beauty? There is scarcely a point of view in the whole park from which some of these trees may not be seen in a very advanced stage of hopeless decay and ugliness. Just at this season, when everything else is clothing itself with fresh green, their mournful, miserable forms are especially distressing; but there is no season when they are not eyesores in themselves and witnesses to want of attention or want of judgment on the part of the Park authorities. Of course the cutting of trees which are sickly beyond hope of recuperation sometimes involves the necessity of replanting, but with regard to most of these Spruces this would not be the case. Let any one follow the East Drive, for example, and note those which are the most obtrusive in their decay. He will find, if he has any eye for the grouping of trees and the effect of landscape arrangements, that in a great majority of cases their presence would be undesirable even if their condition were better. Nature seems by chance to have recognized this fact, for in one or two places in the park where the presence of Spruces is really desirable, they have flourished well. On the West Drive, for example, near the well-known group of Weeping Beeches, stand several Norways in fine condition, and admirably placed as regards the general effect of the scene.

I know, of course, that difficulties attend the cutting of trees in public places. Fetish-worship, as directed to trees, seems not yet to have become extinct in the minds of the ignorant; and whenever an axe is laid to a trunk in the Park there is almost sure to be a letter in some daily paper from some cranky lounger calling attention to the reckless injury to public property which is being worked. By such persons a park seems to be regarded simply as an expanse of ground in which to grow trees—not an expanse in which they should be grown in the right places and grown well. But the Norway Spruces of the Central Park are now so far advanced in decay that even the self-appointed apostle of ignorance in tree-preservation could hardly raise his voice in their favor. And whether he should protest or not, intelligent public opinion would certainly sustain the Park authorities should they enter upon a campaign of almost wholesale cutting. It would be a relief to intelligent eyes to be rid of these distressing objects, and an even greater relief to note the increased chance for development which their removal would afford to their healthy neighbors, and the increased beauty of the wayside groups or little dells which they are now crowding and deforming.

New York, May 1st. *Philodendron.*

To the Editor of GARDEN AND FOREST:

Sir.—In regard to the hardiness of the Spanish Chestnut, of which you ask the experience of your readers, I would say that it is somewhat tender here, but hardly more so than the English Walnut. Both are tender when young, losing the extreme ends of their branches in winter. As they get stronger year by year, this loss does not occur, and, in time, they become large, fruitful trees. Of both the Spanish Chestnut and the English Walnut there are many very large trees about Philadelphia, bearing fruit freely every season.

Germantown. *Joseph Meehan.*

Recent Publications.

The Botanical Works of the late George Engelmann. Collected for Henry Shaw, Esq., and edited by William Trelease and Asa Gray. Pp. 548. Cambridge, 1887.

Mr. Henry Shaw, of St. Louis, the founder of the Botanical Garden of that city, which bears his name, has certainly reared a more appropriate memorial to his old friend and fellow-townsman, in causing this volume to be made, than any statue of bronze or of marble could have been.

Dr. Engelmann's botanical writings cover a period of about fifty years; they relate chiefly to the plants of North America, generally to the most difficult families and genera, for which Dr. Engelmann had a special predilection; and often to plants of the highest horticultural importance and interest, such as the Oaks, Pines, Firs, Grapes, Agaves, Cactuses and Yuccas. In these and in other families he was long the leading authority, and his writings must always be referred to. They were widely scattered through government reports, the proceedings of learned societies, and the columns of periodicals, and quite inaccessible to the general student, who will now welcome this handsome and substantial addition to botanical literature. The different papers are grouped by subjects under fourteen chapters.

No. 1. Contains Engelmann's inaugural thesis *De Antholysi Prodromus*, a remarkable morphological paper which attracted the attention and won the approval of Goethe.

No. 2. Contains the sketch of the Botany of Dr. A. Wislizenus's expedition into northern Mexico.

No. 3. The various papers on the Dodders (*Cascutineæ*), a family which Engelmann studied for many years, and finally elaborated in a classical memoir.

No. 4. Contains all the papers, fourteen in number, on the *Cactaceæ*. These embrace, perhaps, Engelmann's most important botanical work. Many of these were first published by the United States Government, and were beautifully and elaborately illustrated. These and the other illustrations, joined to Engelmann's previous publications, all appear in this reprint and add greatly to its value.

No. 5. Contains the papers on Juncus.

No. 6. Contains all the papers on Yucca, Agave and similar plants, which, like the Cactuses, botanists are generally willing to pass by, because they are so difficult to manage in herbaria, but which Engelmann loved and studied through years of patient and painstaking research.

No. 7. Contains all the papers on Conifers, which no one knew so well or studied so faithfully.

No. 8. Contains the papers on Oaks, and the best information which yet exists in regard to the botanical characters and relationship of the North American species of these most difficult plants.

Nos. 9, 10 and 11. Contain all that Engelmann wrote about the American Grape Vines, on the *Euphorbiaceæ* and on *Isoëtis*. In No. 12 are collected the shorter miscellaneous papers; in No. 13 are various lists and collected descriptions of plants, and in No. 14 are several general notes upon features of vegetation in different parts of the United States.

The editors of this volume have wisely abstained from making any changes in the text as the author left it or from adding explanatory notes, when recent investigations might naturally have lead him to change his views. Their task, however, has not been a light one, as many of the papers were published under conditions unfavorable for proof-reading, and others were never revised by the author. An excellent portrait of Dr. Engelmann, from a photograph taken during the last ten years of his life, increases the value and adds to the interest of this memorial.

Professor Trelease is prepared to furnish a few copies of this book in sheets, which will be delivered to the Express Companies at St. Louis, at cost price, twelve dollars.

Notes.

The California Florist is the title of a new illustrated monthly published at Santa Barbara and San Francisco and devoted to the interests of floriculture on the Pacific Coast. Judging from the first number the new enterprise seems to be in capable and energetic hands, and deserves success.

At an auction sale of a lot of imported Orchids recently held in Boston, a healthy plant of *Cypripedium Fairrieanum* with two new breaks brought $240. At the same sale a plant of the well known hybrid, *Cattleya Exoniensis*, raised many years ago by crossing *C. Mossiæ* and *Lælia purpurata*, was sold for $105. Other plants brought prices proportionally high.

In a paper from the Botanical Institute of the University of Pavia, Dr. Fridiano Cavara describes a number of new fungi which infest grape-vines in Italy, and, in referring to American species, he expresses the opinion that the *Greeneria fuliginea* of Messrs. Scribner and Viala, which was considered by them the type of a new genus, is in reality a form of *Coniathyrium Diplodiella*, and he states that the same form was previously known in Italy.

Small flat Peaches, grown in Florida, have been on sale in our markets for several days, under the name of "Japanese Peaches." It is the fruit of the "Flat Peach of China," which Decaisne believed to be a species (*Prunus platycarpa*), but which later botanists now consider merely one of the many forms of the common Peach cultivated by the Chinese. The Flat Peach is a large and vigorous tree, with long, slender branches, nearly evergreen foliage, pale pink flowers and small fruit, two and a half to three inches wide, so flattened on the upper and lower sides that it is rarely more than one inch deep, with a deep five-angled eye at the top. The stone is round, two-thirds of an inch in diameter, flattened like the fruit, and slightly wrinkled. The flesh, which adheres slightly to the stone, is juicy and of excellent flavor, although the skin is thick and rather tough. The flower-buds of this tree are generally killed at the north, but it is evident from the earliness and excellence of the fruit in this market, that its more general cultivation in the south may be made profitable.

The auction sales of plants in this city show no decline in activity as the spring season closes. They are held every Tuesday and Friday, and on more than one occasion as many as 50,000 plants have been disposed of. The stock in the main is small though well-grown, and was formerly bought by the trade, but lately, and especially this year, many private buyers resort to the warerooms of Young & Eliot for bedding plants and the like. The prices this year have hardly exceeded two-thirds of the wholesale trade prices—but growers do not complain, because when plants are sold in large lots at a cent each, buyers take an increased supply. The sales are not confined, however, to cheap stock. Fine specimen plants are often sent here. At one auction not long ago, where many well-grown Palms were sold, a good specimen of *Phœnix rupicola* brought $94, and experts pronounced it worth $150. The total amount received at that particular sale was between $4,000 and $5,000.

Retail Flower Markets.

NEW YORK, *June 8th.*

Cut flowers are inferior in quality, as a rule, and there is less variety in the shops. Mignonette remains of good size. Peonies are large, and well grown, and sell for from 16 to 20 cts. each. La France Roses are very fair and cost $2.50 a dozen. Catherine Mermets and Brides are not large but are otherwise excellent; they bring $2 a dozen. Niphetos and Perles des Jardins cost $1.50 a dozen. General Jacqueminots are unsatisfactory, although stems are longer than a week since. American Beauties and Paul Neyrons are the finest. All selected Hybrids sell for $5 a dozen, or 50 cts. each. Puritans cost 40 cts. Moss Rosebuds are unusually pretty and mossy, bringing $4 a dozen. Yellow Daisies are 40 cts., and white Marguerites, which are really field Daisies, bring from 15 to 25 cts. a dozen. The blue Cornflowers are highly esteemed and always in demand; they cost 15 cts. a bunch of from 15 to 25. Water Lilies from New Jersey ponds are in market at 25 cts. a bunch of 3. Carnations are much improved in quality and command 50 cts. a dozen. Snowballs are in brisk demand. Cattleyas bring from 50 cts. to $1 a flower. Many bedding-plants are seen in florists' stores. These are well cultivated and make a brilliant blaze in windows, doorways and on plant-stands. Business has been brisk among florists generally this week with orders for out-of-town entertainments and for city weddings.

PHILADELPHIA, *June 8th.*

The quality of flowers, especially Roses, has fallen off decidedly this week. The notable exceptions are Meteor and Madame Cuisin, both of which can be relied upon to give good flowers during the hot summer months. A few Roses are being cut out-of-doors from sheltered positions in favored localities near the city. The Jacqueminots from under glass are by no means good. They sell at from $1.50 to $2 a dozen, the same as Mermets and La France, while The Bride, Perle and Sunset are from $1 to $1.50. Bennett and Gontier are steady at $1.50. Niphetos, $1. Bon Silene and Safrano, 75 cts. Hybrids, $3. American Beauty averages better in quality than the Hybrid Remontants in general, and brings from $3 to $4 a dozen. Carnations, Heliotrope and Mignonette are 25 cts. per dozen. Lily-of-the-Valley, $1. Pansies, 10 cts. Smilax from 40 to 50 cts. a string. *Asparagus tenuissimus* from 50 to 75 cts. a string. *Adiantum cuneatum*, 25 cts. per dozen fronds. Sweet Peas, 50 to 75 cts. a dozen. Cornflowers, blue, white, pink and purple, are 25 cts. a dozen, while the yellow Cornflower is 35 cts. a dozen. Field Daisies are 25 cts., and Dahlias, double and single, $1 to $1.50 a dozen. The Miniature Sunflower (*Helianthus cucumerifolius*) is offered in limited quantities at 50 cts. a dozen. This is a beautiful and useful annual.

BOSTON, *June 8th.*

There is an abundance of flowers here now; in fact, an overstock, particularly of Roses. Prices are low, and the street corners are well supplied with peddlers, who dispose of an enormous quantity of flowers at seasons when the supply is heavy. These dealers are not in favor with the store florists, who have often tried, but as yet without success, to have these street sales prohibited. Whether they injure the store trade or not, they certainly dispose of many flowers to people who would not otherwise buy, and they render a valuable service to the growers by using up their second quality and surplus stock. Those customers who want the best, properly packed, and delivered at their homes, must always go to the regular stores, and, everything considered, these probably get their flowers cheapest in the long run. The main stock of Roses coming in now consists of Teas and the commoner fancy Roses. With the exception of American Beauty and Jacqueminot, there are few large Roses. Jacqueminots are not as good as they have been. The hot weather brings small and thin blooms. Out-door Roses do not show color as yet. Long-stemmed Carnations are quite plenty, and so are Stocks, Heliotrope and Mignonette. Good Lily-of-the-Valley is very scarce, and brings winter prices. Other bulbous flowers are out of market entirely. A good many Ghent and "Mollis" Azaleas are brought in now, and are very useful and effective in large decorations. Prices by the dozen range as follows: Tea Roses, 50 cts.; Mermets, Perles, Sunsets, Niphetos and Brides, $1 to $2, according to quality; Jacqueminots, $3, and American Beauties, $4; Lilies-of-the-Valley, $1; Heliotrope and Mignonette, 50 cts. Smilax, 50 cts. a string. Maidenhair Ferns, 50 cts. a dozen. The florists are all very busy, and appear to have a satisfactory spring trade.